



OPERATIONAL EVALUATION REPORT

THE BOEING COMPANY

BOEING 737

BRAZILIAN AIRCRAFT EVALUATION GROUP

REVISION 1 – MARCH 25, 2021

ANAC Team Composition

Boeing 737-8 initial evaluation

Guilherme dos Santos Macedo	Boeing 737-8 MAX Chairman
Sérgio Pinheiro Simões	Boeing 737-8 MAX Evaluator Pilot
Roberto Vicente Janczura	Boeing 737-8 MAX Test Subject

Boeing 737-8 FCC software version P12.1.2

André Marques Caetano	Boeing 737-8 MAX Chairman
Bruno Xavier Silveira	Boeing 737-8 MAX Evaluator Pilot
João Carlos Pretto Centeno (*)	Boeing 737-8 MAX Test Subject

(*) Boeing 737-8 Captain at Gol Linhas Aéreas (Brazilian RBAC/Part 121 airline)

OPERATIONAL EVALUATION REPORT

BOEING 737

Mario Igawa

Manager, Aeronautical Products Design Certification Branch
Department of Airworthiness

Revision Record

Revision Nº.	Content	Date
Original	Initial Boeing 737 family Operational Evaluation	10 JAN 2018
1	737-8 FCC software version P12.1.2. Removed the 737-8 Compliance Checklist in Annex 1. Added ODR tables for the 737-800SFP. Added ODR tables from the 737-8 to 737-800. Minor editorial updates.	25 MAR 2021

Index

ANAC Team Composition	2
Revision Record.....	4
Index.....	5
Acronyms	6
1. INTRODUCTION	8
2. PILOT TYPE RATING	10
3. SPECIFICATIONS FOR PILOT TRAINING	11
4. SPECIFICATIONS FOR CHECKING	16
5. SPECIFICATIONS FOR RECENT EXPERIENCE AND CURRENCY.....	17
6. TECHNICAL PUBLICATIONS	17
7. MISCELLANEOUS	18
Appendix 1 – MASTER DIFFERENCE REQUIREMENTS (MDR) TABLE.....	19
Appendix 2 – OPERATOR DIFFERENCE REQUIREMENTS (ODR) TABLES	20
Appendix 3 – BOEING 737 MAX SPECIAL TRAINING FOR FLIGHTCREWS	32

Acronyms

AFDS	Autopilot Flight Director System
AFM	Airplane Flight Manual
ANAC	<i>Agência Nacional de Aviação Civil</i>
AOM	Airplane Operations Manual
AIC	Aeronautic Information Circular
AP	Autopilot
ATC	Air Traffic Control
CBT	Computer Based Training
ECL	Electronic Checklist
EDFCS	Enhanced Digital Flight Control System
EFIS	Electronic Flight Instrument System
EFVS.....	Enhanced Flight Visual System
FAA	Federal Aviation Administration
FANS	Future Air Navigation System
FCC.....	Flight Control Computer
FD	Flight Director
FFS	Full Flight Simulator
FMS.....	Flight Management System
FSB.....	Flight Standardization Board
FSTD.....	Flight Simulation Training Device
GS	Ground School
HUD	Head-Up Display
IAC	<i>Instrução de Aviação Civil</i>
IS.....	<i>Instrução Suplementar</i>
LAM	Landing Attitude Modifier
LOFT.....	Line Oriented Flight Training
LOS	Line Operational Simulation
LSP	Left Seat Pilot
MCAS.....	Maneuvering Characteristics Augmentation System
MDR	Master Differences Requirements
MEL.....	Minimum Equipment List
MMEL.....	Master Minimum Equipment List
ND.....	Navigation Display
NNC	Non-normal checklist
ODR	Operator Differences Requirements
OTD	Other Training Device

PDCS	Performance Data Computer System
PFD	Primary Flight Display
PIC	Pilot In Command
PMS	Performance Management Systems
POI	Principal Operations Inspector
RBAC.....	<i>Regulamento Brasileiro de Aviação Civil</i>
RBHA	<i>Regulamento Brasileiro de Homologação Aeronáutica</i>
RCAS	Roll Command Alerting System
SAR	<i>Superintendência de Aeronavegabilidade</i>
SLF	Supervised Line Flying
STS	Speed Trim System
TASE.....	Training Areas of Special Emphasis
TCDS	Type Certificate Data Sheet
VREF	Landing Reference Speed

1. INTRODUCTION

1.1. Background

The Boeing 737 series have been in service for many years in Brazil, even before the ANAC Aircraft Evaluation Group was established.

An operational evaluation was conducted by ANAC Aircraft Evaluation Group in Miami, FL, USA, during October 2017, where the proposed differences training for the 737-8 MAX was evaluated, considering the 737-800 as the base aircraft. The evaluation was conducted using the methods described in ANAC IAC 121-1009.

In March 2019, the FAA FSB conducted a T2 handling qualities evaluation of revised FCC P11.1 software between the 737-800 and the 737-8. The FSB evaluation determined that the handling qualities between the 737-800 and the 737-8 validated the original T2 evaluation results conducted in August 2016. Subsequently in March 2019, the FSB conducted an additional T1 functional equivalence evaluation with the new FCC software version P12.1. This evaluation determined functional equivalence between FCC software versions P11.1 and P12.1 with regards to airplane handling qualities and pilot training. ANAC accepted the FAA FSB evaluation results.

In September 2020, in a joint board with the FAA, EASA and TCCA, the ANAC conducted operational evaluations of the updated 737-8 FCC software version P12.1.2, revised non-normal checklists (NNC), and all proposed pilot training in support of 737-8 design changes. The ANAC determined the updated FCC software version P12.1.2 is operationally suitable. Boeing 737 MAX Special Training for flight crews is specified in Appendix 3 of this Report.

The results presented here for the previous 737 models (737-200, 737-300, 737-400, 737-500, 737-600, 737-700 and 737-800) are based on the Boeing 737 FAA FSB Report revision 18, dated 03 March 2021.

1.2. Objective

The objective of this report is to present the results from the operational evaluation of the Boeing 737 series aircraft.

The content of this report is applicable to operations under the framework of ANAC.

1.3. Purpose

The purpose of this report is to:

- Determine the Pilot Type Rating assigned for the Boeing 737 series;
- Recommend the requirements for training, checking and currency applicable to flight crew for the Boeing 737 series, and functionalities; and
- Determine operational suitability of Boeing 737 series.

1.4. Applicability

This report is applicable to:

- Brazilian operators of the Boeing 737 series under RBAC 91 and RBAC 121 requirements;
- Approved Training Organizations certified under RBAC 142 (Training Centers);

- Civil Aviation Inspectors related to safety oversight of the Boeing 737 series;
- ANAC Principal Operations Inspectors (POIs) of the Boeing 737 series operators.

1.5. Cancellation

- ANAC letter nº 18/2020/GAA/GCOI/SPO-ANAC, dated 06 October 2020.

2. PILOT TYPE RATING

The ANAC established 3 (three) different type ratings for the Boeing 737 series aircraft as follows:

Table 1 – ANAC IS 61-004 (type rating list)

Fabricante <i>(Manufacturer)</i>	Aeronave <i>(Aircraft)</i>		Observações <i>(Remarks)</i>	Designativo <i>(Designative)</i>
	Modelo <i>(Model)</i>	Nome <i>(Name)</i>		
BOEING COMPANY, THE	737-200/200C	B-737	Relatório de Avaliação Operacional Boeing 737 <i>ANAC Operational Evaluation Report Boeing 737</i>	B737
	737-300/400/500	B-737CL		B733
	737-600/700/800	B-737NG		B739
	737-8	B-737 MAX		

3. SPECIFICATIONS FOR PILOT TRAINING

3.1. Airman Experience

The provisions of this section apply to all 737 training programs and assume the training will be given to airmen with previous experience. Examples of applicable previous experience may include any of the following: experience in RBAC 121 operations, former military, commuter, or corporate pilots with turbine powered aircraft experience, etc. For airmen not having such experience (e.g. recent “ab initio” program graduates), additional requirements may be necessary as determined by the ANAC.

3.2. Training Areas of Special Emphasis (TASE)

NOTE: References to “pilots” in this section include both pilot in command (PIC) and second in command (SIC) unless otherwise specified.

Pilots must receive special emphasis on the following areas:

- Alternate Go-Around Flaps for 737NG and 737 MAX aircraft certified to conduct Flaps 30° approaches using Flaps 5° during go-around. The FAA conducted an operational suitability evaluation and found no handling quality differences between the 737NG and the 737 MAX when conducting the alternate go-around flaps operations in accordance with the AFM appendix. A flightcrew member who completed training on either the 737NG or the 737 MAX does not need to repeat training in the other series aircraft.

The use of Flaps 5° for go-around creates a substantial increase in approach climb weights in hot and/or high environments. The Flaps 30° approach speeds for Flaps 5° go-around operations require minor-model specific speed additives to the standard Flaps 30° VREF speeds in order to maintain the performance requirements of §25.121(d). Alternate Go-Around Flaps operations require a separate AFM for performance calculation, and a supplementary procedure defining flight crew actions. Operators are encouraged to develop an approach review and briefing card for use by flight crews when conducting any Alternate Go-Around Flaps operation. This training should be given during initial and recurrent training programs, or as determined by the ANAC.

a) Ground Training. For flight crews current in the 737NG or in the 737 MAX aircraft, ground training is established at Level B. Training may be administered via CBT, stand up lectures or video and should include performance requirements, speed additive use and effect on maneuver margins, alternate go-around procedures, flight crew callouts, and engine failure procedures.

b) Flight Training. For flight crews current in the 737NG or in the 737 MAX aircraft, flight training is established at Level D. Training should include the following:

- A two engine flaps 30° approach to a flaps 5 go-around;
- A two engine flaps 30° approach to an engine failure during a flaps 5 go-around; and
- A two engine flaps 30° approach in icing conditions to an engine failure during a flaps 5° go-around.

- Automatic Landings. Flightcrew training must occur with the appropriate autopilot (AP) autoland systems (e.g., Fail Operational vs. Fail Passive). Ground training is required during a preflight briefing prior to flight training. Flight training can occur in either a full flight simulator (FFS) or airplane. Flight training must ensure appropriate AFM limitations are addressed and complied with. This item must be included in initial, upgrade, transition, differences, and recurrent training. The 737NG and 737 MAX autoland systems are identical and do not require differences training unless transitioning between the Fail Passive system and the Fail Operational system.
- EDFCS. When an EDFCS that supports Fail Operational autoland operations with a Fail Passive Rollout system is used, flight training can occur in either an FFS or airplane and should address dual channel AP approaches. This item must be included in initial, upgrade, transition, differences, and recurrent training. The 737NG and 737 MAX autoland systems are identical and do not require differences training unless transitioning between the Fail Passive system and the Fail Operational system. 737-8: differences ground training from the B-737-800 to the B-737-8 must include the following special emphasis areas:
 - a) Elevator Jam Landing Assist System to address the Elevator Jam Landing Assist system. These items must be included in initial, transition, differences, and recurrent training.
 - b) Landing Attitude Modifier (LAM) to address the two LAM system functions and associated flight spoiler deployments. These items must be included in initial, transition, differences, and recurrent training.
 - c) Gear handle operation changes to address standard operating procedure checklist changes. This item must be included in initial, transition, differences, and recurrent training.
 - d) Flight crew alerting system.
- When HUD is used, the recurrent training programs must address appropriate recurrent training for both HUD and non-HUD operations.
- Multiple flight deck alerts during non-normal conditions. Training must include instances where a single malfunction results in multiple flight deck alerts, and flightcrew alert prioritization and analysis of the need to conduct additional NNCs. This training must be included in initial, upgrade, transition, and recurrent training.
- 737-8 FCC. MCAS ground training must address the latest FCC system description, functionality, and associated failure conditions to include flightcrew alerting. This training must be included in initial, transition, differences, and recurrent training.
- Stabilizer Trim.
 - Training must emphasize the following during electric and manual stabilizer trim operations:
 - a) Manufacturer recommended procedures for the proper use of main electric stabilizer trim during normal and non-normal conditions, and manual stabilizer trim during non-normal conditions;
 - b) The different manual trim techniques recommended by the manufacturer; and
 - c) The effects of airspeed and aerodynamic loads on the stabilizer and the resulting trim forces in both the nose-up and nose-down directions during operations at low and high airspeeds.

d) Use of manual stabilizer trim during approach, go-around, and level off.

- Electric and manual stabilizer trim operation during normal and non-normal conditions. This item must be included in initial or transition training and must be accomplished at least once every 36 months during recurrent training.
- Runaway stabilizer. Training must emphasize runaway stabilizer recognition and timely pilot actions required by the Runaway Stabilizer NNC. Demonstrate control column functionality and its effect on a runaway stabilizer condition. Emphasize the need to attempt to reduce control column forces with main electric stabilizer trim prior to selecting STAB TRIM cutout. This item must be included in initial or transition training and must be accomplished at least once every 36 months during recurrent training.
- Unreliable airspeed. This training applies to pilots flying the 737NG, 737 MAX, or conducting 737NG/737 MAX Mixed Fleet Flying (MFF). Training must include erroneous high angle of attack (AOA) malfunctions. This training must also include a demonstration of Flight Director (FD) behavior (biasing out of view) during a go-around or missed approach. This item must be included in initial, transition, and differences training and must be accomplished at least once every 36 months during recurrent training. Either pilot may serve as pilot flying (PF) for this training task. Recurrent training may be accomplished in either a 737NG or 737 MAX FFS.

3.3. Seat Dependent Tasks training

Pilots must receive initial training in these seat dependent tasks:

- HUD (left seat, right seat, when installed); initial, transition, upgrade, and recurrent training.
- Nosewheel steering (left seat, right seat, when installed); initial, transition, upgrade, and recurrent training.
- Manual Landing Gear Extension (right seat); initial, transition and recurrent training.

3.4. Flight Simulation Training Devices (FSTD)

Special device or simulator characteristics are described for training, checking, and re-establishing currency as follows:

- Particular device characteristics have been specified by the ANAC as the minimum acceptable for differences training or checking between certain series. These requirements are identified in MDRs, where applicable, by a star (*) following the minimum level specification (e.g. C*). Minimum acceptable C* device characteristics must include a cockpit-like environment which can provide flight training using appropriate controls, displays, and systems, not common to the base aircraft. This typically can be satisfied by a Level 5 Training Device. FMS training may be conducted using an ANAC approved training device. If such device is not used, an approved FMS equipped simulator, or airplane must be used. Training devices acceptable for Boeing 737 FMS training must include a cockpit-like environment, which can provide “dynamic” flight training in the integrated operation of Boeing 737 FMS components.
- Enhanced Flight Visual System (EFVS) must be trained in a level C or higher FFS in both day and night conditions.

3.5. Differences Training Between Related Aircraft

Pilots must receive differences training between the 737-200 through 737-800 aircraft when mixed fleet flying that series of aircraft. Pilots must receive difference training between the 737-800 aircraft and 737-8 aircraft when mixed fleet flying that series of aircraft. The level of training is specified in Appendix 1.

After a pilot receives the proper differences training from the 737-800 to the 737-8 aircraft, it is recommended two legs of SLF in a 737-8 aircraft.

3.5.1. PFD/ND differences

737CL (EFIS and Non-EFIS) Aircraft to 737NG PFD/ND Aircraft Only. A minimum of 12 hours in an interactive CBT and 6 programmed hours in a level 6 FTD. For individuals with EFIS experience, a LOFT session (4 hours) may be substituted for the two legs of SLF in an aircraft following training as required by the supervised line flying table. An exception to the above requirement was successfully tested and may be implemented without further concurrence with the ANAC Aircraft Evaluation Group. Pilots trained and qualified in the B-737-600 through -800 series group with EFIS/MAP Display System may be trained using a self-paced interactive CBT program that demonstrates all capabilities of the PFD/ND Display System without the necessity for FTD or LOFT. ND is an expansion of MAP and the CBT need only demonstrate the differences in display selections and capabilities (e.g. Center Map).

3.5.2. Blended, Split Scimitar, Advanced Technology Winglet.

Operators engaged in mixed fleet flying B-737 series aircraft with and without winglets must address differences at the A/A/A level including:

- Physical/dimensional differences, with emphasis on lower strake clearance considerations during ground operations
- Takeoff crosswind guidelines
- Landing crosswind guidelines
- Ground contact angles for normal landings

3.5.3. Roll Command Alerting System (RCAS)

RCAS is optional equipment on the 737NG and standard on the 737-8. The ANAC found Level B training to be sufficient for initial, transition, and upgrade training in that series aircraft.

3.5.4. Future Air Navigation System (FANS)

Differences training for FANS 1 and/or FANS 2 may be satisfied with Level C training in accordance with AC 90-117, Data Link Communications (as amended) for all 737 aircraft. Flightcrew who have completed FANS 1 training may qualify on FANS 2 with Level A training.

3.5.5. Alternate Navigation System (ANS)

The ANS consists of use of the ISFD and Alternate Navigation Control Display Unit (ANCDU) as a means to provide alternate navigation guidance in the event of an all Flight Management Computer (FMC) fail situation. It is standard equipment on the 737 MAX BBJ. The ANAC has determined Level A training to be sufficient for differences.

3.5.6. FMS for 737 MAX

Flightcrew qualified on FMC U13 may qualify on a FMC U14 with Level A training.

3.6. Special Training

Completion of the ground and flight training specified in Appendix 3 is required before flying the 737 MAX.

4. SPECIFICATIONS FOR CHECKING

4.1. Landing from a No Flap or Non-Standard Flap Approach.

The probability of flap extension failure on the 737, 737CL, 737NG, and 737 MAX aircraft is extremely remote due to system design; therefore, demonstration of a no-flap approach and landing is not required. However, a partial flap approach and landing, with the leading edge devices in either the extend or full extend position, and trailing edge flaps less than 15, is required during pilot certification.

4.2. Alternating proficiency checks for B-737-200, B-737-300/400/500 and B-737-600/700/800 Series Groups.

For mixed-fleet-flying between series groups, proficiency checks should alternate, but are not required to alternate, each six months for PICs, and annually for other flight crewmembers. When such alternating checks are accomplished, the differences assessment of other series within the series group being checked (e.g. either B-737-200, B-737-300/400/500 and/or B-737-600/700/800) may be satisfied by ground training, written questionnaire, oral review, or other method approved by the POI. However, such simplified programs may not be approved if they result in progressive loss of knowledge or skills related to particular differences over successive recurrent periods.

4.3. Mixed-fleet B-737 Programs, which do not alternate proficiency checks.

If an air carrier is operating a mixed B-737-200, B-737-300/400/500 and/or B-737 600/700/800 fleet and does not alternate checks between respective series groups, then simulators representative of the most demanding series configuration(s) should be used for each check (e.g. B-737-300 simulator with FMS, autoland, etc.). If simulators for the most demanding series are not available, then the check must be supplemented at the level specified in the ODR tables. Checks for differences from other series are addressed through use of training devices or as specified in the MDRs.

4.4. FMS Demonstration of Competency. FMS Checks.

Checking for differences related to a series having FMS must include a demonstration of competency covering both an oral/written exam and demonstration of proficiency with both normal and non-normal procedures. FMS proficiency should be demonstrated with “hands-on” operation, and address each applicable FMS mode or function. Specific items and flight phases to be checked may include initialization, takeoff, departure, cruise, arrival, precision and non-precision approach, missed approach, holding, diversion to an alternate or route re-clearance, and pertinent non-normals. Scenarios used should include routes, airports, ATC situations, and other factors, which are representative of, or present equivalent complexity to those anticipated for that operator. FMS competency may be demonstrated in conjunction with other checking.

4.5. Seat Dependent Tasks

During initial, transition, and upgrade checking, pilots must be checked in these seat dependent tasks:

- Head Up Guidance Display (left seat)
- Nosewheel steering (left seat)

4.6. Other Checking Items

- a) **Precision approach using HUD and EFVS.** When HUD use is approved, checking must include suitable demonstration of HUD use for modes and phases of flight authorized. HUD vs. FD and Raw Data. When HUD is installed, proficiency check maneuvers, LOFT, LOS or other demonstrations may be completed using HUD at the check pilot's/inspector's discretion. However, periodic assessment of non-HUD skills should be demonstrated, and at any time a check pilot/inspector may at their discretion request that authorized maneuvers be performed without use of HUD (e.g. if manual CAT I F/D operations are authorized, the airman being checked may be requested to perform the maneuver without HUD).

4.7. Flight Simulation Training Devices (FSTD)

Enhanced Flight Visual System (EFVS) must be checked in minimum of a level C full flight simulator in both day and night conditions.

5. SPECIFICATIONS FOR RECENT EXPERIENCE AND CURRENCY

Pilots must receive differences currency for mixed fleet flying between the 737 series aircraft.

6. TECHNICAL PUBLICATIONS

6.1. Master Minimum Equipment List - MMEL

The Boeing 737 MMELs approved by the FAA shall be used by Brazilian operators as a basis for developing their MEL. These documents are available at the FAA website, through the link <http://fsims.faa.gov/PICResults.aspx?mode=Publication&doctype=MMEL>.

6.2. Airplane Flight Manual - AFM

Brazilian operators shall use the Airplane Flight Manuals – AFMs approved by ANAC for the B-737 series for developing their Airplane Operation Manuals – AOMs, when applicable.

7. MISCELLANEOUS

7.1. Forward Observer Seat

The Boeing 737 series aircraft forward center observer seat has been evaluated and determined to meet regulatory requirements.

7.2. Aircraft Approach Category

All operators should comply with DECEA publication AIC N07/09 dated 12 Mar 2009 and use an approach category appropriate to the speed of VREF. Air carriers may be further restricted by their operations specifications for circling approaches.

Approach Category for Boeing 737 series aircraft is as follows:

Aircraft	Category
737-200/200C	C
737-300/400/500	C
737-600/700	C
737-800	C or D
737-8	C or D

Due to the numerous maximum landing weight options among the 737-600 through -800 series group and the 737-8, determining an aircraft approach category may be done using the certificated maximum flap setting of 40° and the particular airplane's AFM maximum certificated landing weight.

7.3. Normal Landing Flaps

The 737, 737CL, 737NG, and 737 MAX series aircraft normal "final flap setting" is Flaps 15, 30, and 40. Flaps 15 is primarily used for non-normal situations (e.g., engine-out approach) or atypical operations (e.g., high altitude airport operations).

Appendix 1 – MASTER DIFFERENCE REQUIREMENTS (MDR) TABLE

These are the minimum levels of training, checking and currency required. Differences levels are arranged as training/checking/currency:

Base Aircraft →					
Related aircraft ↓	B-737	B-737CL (non EFIS)	B-737CL (EFIS)	B-737NG	B-737 MAX
B-737	A/A/A NAV – B/B/C PMS – C/B/C AFCS – C/B/C (1) ADV – B/A/A	C*/C*/D	C*/C*/D	D/D/D	NOT EVALUATED
B-737CL (non EFIS)	C*/C*/D (2) LIMITED FMS – C/B/C	A/A/A	C/B/B	C/B/B	NOT EVALUATED
B-737CL (EFIS)	C*/C*/D (2) LIMITED FMS – C/B/C	C/B/B	A/A/A	(3) C/B/B PFD/ND – D/C/C	NOT EVALUATED
B-737NG	D/D/D	(3) C/B/B PFD/ND – D/C/C	(3) C/B/B PFD/ND – D/C/C	A/A/A (3) EFIS to PFD/ND – C/B/A* PFD/ND to EFIS – D/C/C EDFCS – C/C/C	B/B/B
B-737 MAX	NOT EVALUATED	NOT EVALUATED	NOT EVALUATED	(D*) B/B/B	A/A/A

Notes:

D* - Prior to operating the 737 MAX aircraft with FCC software version P12.1.2 or newer, each pilot must complete the required training outlined in Appendix 3.

NOTE: Appendix 3 serves as special training for ground and flight training requirements for 737 MAX pilot qualification. The asterisk MDR annotation, “(D*) B/B/B” is intentionally used in the table to call attention to special training requirements.

A Level C or D full flight simulator (FFS C-D) is required for the D* training.

C* - Level C training or checking, which requires use of a Level 5 FSTD or higher.

(1) All Model 737-200 series airplanes having serial numbers 20492 and on are of the -200 advanced (737-200 ADV) series airplane and require Level B differences training when transitioning from the 737-100/-200. All earlier airplanes can be kit-modified to the advanced configuration.

(2) Limited FMS pertains to 737CL airplanes, which retain partial FMS functions.

(3) Level C training requirement may be satisfied by interactive CBT.

Appendix 2 – OPERATOR DIFFERENCE REQUIREMENTS (ODR) TABLES

This Design Differences tables, from the Boeing 737-800 to the Boeing 737-8, were proposed by The Boeing Company and validated by ANAC. They list the minimum differences levels operators must use to conduct differences training, checking and currency of flightcrew members.

FROM BASE AIRCRAFT: 737-800	DESIGN	REMARKS	FLT CHAR	PROC CHNG	TRAINING	CHECKING	CURRENCY
TO RELATED AIRCRAFT: 737-8	CONFIGURATION	Nose Landing Gear Lengthened 8" Dual Tail Anti-Collision/Position Lights	No	No	A	A	
	PANEL LAYOUT	New MAX DISPLAY SYSTEM (MDS)	No	No	B	B	
	PANEL LAYOUT	New 2 Position Landing Gear Control Lever	No	Yes	B	B	
	LIMITATIONS	Size/type/system limitations	No	No	A	A	
	LIMITATIONS	Ground wind operating envelope	No	No	A	A	
	WEIGHTS	Increased to: Max Taxi Weight 181,700 lbs Max Takeoff Weight 181,200 lbs Max Landing Weight 152,800 lbs Max Zero Fuel Weight 145,400	No	No	A	A	
	21-AIR CONDITIONING and PRESSURIZATION	PACKS: Electronic Pack Flow Control System	No	No	B	B	
	21-AIR CONDITIONING and PRESSURIZATION	PACKS: Revised PACK light logic	No	Yes	A	A	
	21-AIR CONDITIONING and PRESSURIZATION	EQUIPMENT COOLING: EQUIP SMOKE light and Detection System	No	Yes	B	B	
	22- AUTOFLIGHT	FCC: Added MCAS (see Appendix 3).	No	No	B	B	
	22- AUTOFLIGHT	FCC: Updated AFDS functionality logic (see Appendix 3).	No	No	B	B	
	22- AUTOFLIGHT	FCC: Revised STAB OUT OF TRIM light logic (see Appendix 3).	No	Yes	B	B	
	22- AUTOFLIGHT	FCC: Revised SPEED TRIM FAIL light logic (see Appendix 3).	No	Yes	B	B	
	24- ELECTRICAL POWER	Relocated 4 circuit breakers from aisle stand to P-6	No	No	A	A	
	27- FLIGHT CONTROLS	FLIGHT CONTROL SYSTEMS Fly by Wire Spoiler System	No	No	B	B	
	27- FLIGHT CONTROLS	FLIGHT CONTROL SYSTEMS Maneuver Load Alleviation	No	No	B	B	
	27- FLIGHT CONTROLS	FLIGHT CONTROL SYSTEMS Landing Attitude Modifier (LAM)	No	No	B	B	
	27- FLIGHT CONTROLS	FLIGHT CONTROL SYSTEMS Elevator Jam Landing Assist	No	No	B	B	
	27- FLIGHT CONTROLS	FLAPS/SLATS Position indicator relocated to MDS	No	No	B	B	

FROM BASE AIRCRAFT: 737-800 TO RELATED AIRCRAFT: 737-8	DESIGN	REMARKS	FLT CHAR	PROC CHNG	TRAINING	CHECKING	CURRENCY
	27- FLIGHT CONTROLS	SPEEDBRAKES/SPOILERS Emergency Descent Speedbrakes (EDS)	No	No	B	B	
	27- FLIGHT CONTROLS	SPEEDBRAKES/SPOILERS SPEEDBRAKE EXTENDED light logic	No	No	B	B	
	27- FLIGHT CONTROLS	SPEEDBRAKES/SPOILERS SPOILERS light added	No	Yes	B	B	
	27- FLIGHT CONTROLS	SPEEDBRAKES/SPOILERS ASSIST ON light added	No	Yes	B	B	
	27- FLIGHT CONTROLS	STABILIZER TRIM: Stab Trim cutout switches panel nomenclature	No	No	B	B	
	28- FUEL	CONTROLS AND INDICATORS: Additional System Alerts (see ATA 34- Navigation)	No	Yes	B	B	
	28- FUEL	CONTROLS AND INDICATORS: Revised fuel FILTER BYPASS light logic	No	Yes	B	B	
	29 – HYDRAULIC POWER	CONTROLS AND INDICATORS: System indications relocated to MDS Page	No	No	A	A	
	30- ICE AND RAIN	ENGINE ANTI-ICE ADDITIONAL ENG ANTI-ICE alert	No	Yes	B	B	
	30- ICE AND RAIN	ENGINE ANTI-ICE REVISED COWL VALVE NOMENCLATURE AND COLOR (AMBER)	No	Yes	B	B	
	30- ICE AND RAIN	WING ANTI-ICE L / R VALVE ALERTS COLOR (AMBER)	No	Yes	B	B	
	31- INDICATING/RECORDING SYSTEMS	Incorporation of MAX DISPLAY SYSTEM (MDS) 4 Large Display LCD Units	No	No	B	B	
	31- INDICATING/RECORDING SYSTEMS	LIGHTING CONTROLS Updated And Relocated Engine Display Control Panel	No	Yes	B	B	
	31- INDICATING/RECORDING SYSTEMS	LIGHTING CONTROLS Revised Display Brightness, Display Select Switch Panels, Master Dim and Test	No	No	B	B	
	31- INDICATING/RECORDING SYSTEMS	ENGINE DISPLAY CONTROL PANEL Added Engine Transfer Switch	No	No	B	B	
	31- INDICATING/RECORDING SYSTEMS	ENGINE DISPLAY CONTROL PANEL Added MFD Info Switch	No	Yes	B	B	
	31- INDICATING/RECORDING SYSTEMS	ENGINE DISPLAY CONTROL PANEL Revised N1 and Speed Set Selectors	No	No	B	B	

FROM BASE AIRCRAFT: 737-800 TO RELATED AIRCRAFT: 737-8	DESIGN	REMARKS	FLT CHAR	PROC CHNG	TRAINING	CHECKING	CURRENCY
	31- INDICATING/RECORDING SYSTEMS	PFD Expanded Sky Ground and Compass Display	No	No	B	B	
	31- INDICATING/RECORDING SYSTEMS	EFIS CONTROL PANEL Dedicated Vertical Situation Display (VSD) switch	No	No	B	B	
	31- INDICATING/RECORDING SYSTEMS	EFIS CONTROL PANEL ND/WXR Range Selector- revised functionality	No	No	B	B	
	31- INDICATING/RECORDING SYSTEMS	STANDBY FLIGHT INSTRUMENTS INTEGRATED STANDBY FLIGHT INSTRUMENT (ISFD) basic	No	No	B	B	
	31- INDICATING/RECORDING SYSTEMS	AUX DISPLAY-Added Information Displayed	No	No	B	B	
	31- INDICATING/RECORDING SYSTEMS	AUX DISPLAY-Added Flight number, Transponder, Selcal, UTC, Date and Elapsed time	No	No	B	B	
	31- INDICATING/RECORDING SYSTEMS	AUX DISPLAY-Added Clock start/stop switches relocated to glareshield	No	No	B	B	
	31- INDICATING/RECORDING SYSTEMS	MAINT LIGHT (replaces proximity switch electronic unit (PSEU) light)	No	Yes	B	B	
	32- LANDING GEAR	NOSE WHEEL STEERING switch relocated	No	No	B	B	
	32- LANDING GEAR	Brake accumulator pressure indicator relocated	No	No	B	B	
	32- LANDING GEAR	Auto brake switch relocated	No	No	B	B	
	32- LANDING GEAR	Landing Gear Warning Cutout switch relocated	No	No	B	B	
	32- LANDING GEAR	Revised landing gear lock override switch	No	No	B	B	
	34- NAVIGATION	FLIGHT MANAGEMENT SYSTEM FMC SOFTWARE U13 basic	No	No	B	B	
	34- NAVIGATION	FLIGHT MANAGEMENT SYSTEM Variable Takeoff Rating function	No	No	B	B	
	34- NAVIGATION	FLIGHT MANAGEMENT SYSTEM Fuel Alerting and Fuel Management	No	No	B	B	
	34- NAVIGATION	CDU Pages New or Revised: Perf Init page 1/2	No	No	B	B	
	34- NAVIGATION	CDU Pages New or Revised: N1 Limit	No	No	B	B	
	34- NAVIGATION	CDU Pages New or Revised: Fuel Progress page 5/5	No	Yes	B	B	
	34- NAVIGATION	FMC and Engine Display Alert Messages: USING RSV FUEL	No	Yes	B	B	

FROM BASE AIRCRAFT: 737-800 TO RELATED AIRCRAFT: 737-8	DESIGN	REMARKS	FLT CHAR	PROC CHNG	TRAINING	CHECKING	CURRENCY
	34- NAVIGATION	FMC and Engine Display Alert Messages: FUEL DISAGREE	No	Yes	B	B	
	34- NAVIGATION	FMC and Engine Display Alert Messages: INSUFFICIENT FUEL	No	Yes	B	B	
	34- NAVIGATION	FUEL FLOW (engine display only)	No	Yes	B	B	
	36- PNEUMATIC	BLEED AIR CONTROL PANEL Removed RAM DOOR FULL OPEN lights	No	No	A	A	
	36- PNEUMATIC	BLEED AIR CONTROL PANEL Revised BLEED TRIP OFF nomenclature to BLEED	No	Yes	A	A	
	36- PNEUMATIC	BLEED AIR CONTROL PANEL Revised BLEED light logic	No	Yes	B	B	
	49- APU	SYSTEM OPERATION Removed APU MAINT light	No	No	A	A	
	49- APU	SYSTEM OPERATION Removed APU EGT gauge	No	No	A	A	
	49- APU	SYSTEM OPERATION Added retractable door	No	No	B	B	
	49- APU	SYSTEM OPERATION Added DOOR light	No	Yes	B	B	
	72, 73,77,78,80 POWER PLANT	ENGINES: New LEAP-1B engines	No	Yes	B	B	
	72, 73,77,78,80 POWER PLANT	EEC SYSTEM Removal of Overboost rating	No	No	B	B	
	72, 73,77,78,80 POWER PLANT	EEC SYSTEM Addition of Icing Idle speed	No	No	B	B	
	72, 73,77,78,80 POWER PLANT	INDICATORS Revised Display Format	No	No	B	B	
	72, 73,77,78,80 POWER PLANT	INDICATORS Compact engine display removed	No	No	A	A	
	72, 73,77,78,80 POWER PLANT	INDICATORS Added THRUST alert	No	Yes	B	B	
	72, 73,77,78,80 POWER PLANT	INDICATORS Added MOTORING indication for bowed rotor logic	No	No	B	B	
	72, 73,77,78,80 POWER PLANT	THRUST REVERSER SYSTEM Added REVERSER COMMAND and REVERSER AIR/GND alerts	No	Yes	B	B	
	72, 73,77,78,80 POWER PLANT	THRUST REVERSER SYSTEM Replaced REVERSER alert with REVERSER LIMITED	No	Yes	B	B	

This Maneuver Differences table, from the Boeing 737-800 to the Boeing 737-8, was proposed by The Boeing Company and validated by ANAC. It lists the minimum differences levels operators must use to conduct differences training and checking of flightcrew members.

FROM BASE AIRCRAFT: 737-800 TO RELATED AIRCRAFT: 737-8	MANUEVER	REMARKS	FLT CHAR	PROC CHNG	TRAINING	CHECKING	CURRENCY
	PREFLIGHT INSPECTION	Optional installation of two-position tailskid	No	Yes	A	A	
	CLIMB	After take-off checklist – Landing gear handle	No	Yes	B	B	
	NON-NORMAL	Read and do Checklist changes due to annunciation and system changes listed in DESIGN difference tables (see Appendix 3).	No	Yes	A	A	
	CROSS-FCC TRIM MONITOR	See Appendix 3.	No	No	D*	A	
	Demonstration of MCAS Activation	See Appendix 3.	No	No	D*	A	
	Erroneous High AOA during Takeoff	See Appendix 3.	No	No	D*	A	

Note: See Appendix 3 for additional training requirements.

D* - Prior to operating the 737 MAX aircraft with FCC software version P12.1.2 or newer, each pilot must complete the required training outlined in Appendix 3.

This Design Differences Table, from the Boeing 737-800 to the Boeing 737-800SFP, was proposed by Boeing and validated by ANAC. It lists the minimum differences levels operators must use to conduct differences training and checking of flightcrew members.

FROM BASE AIRCRAFT: 737-800 TO RELATED AIRCRAFT: 737-800SFP	DESIGN	REMARKS	FLT CHAR	PROC CHNG	TRAINING	CHECKING	CURRENCY
	Configuration	Optional two-position tail skid (option requires APU drain mast reposition).	No	Yes	A	A	
	Configuration	Changed and relocated aft pressure bulkhead.	No	No	A	A	
	Limitations	Changes related to limitations differences for improved performance as defined in the AFM and Flightcrew Operating Manual (FCOM).	No	No	A	A	
	Performance	Changes related to design differences for improved performance as defined in the AFM and FCOM.	No	No	A	A	
	ATA 27 Flight Controls	Added sealed leading edge slats.	No	No	A	A	
	ATA 27 Flight Controls	Increased on-ground spoiler deflections.	No	No	A	A	
	ATA 27 Flight Controls	Changed speedbrake handle detent.	No	No	A	A	
	ATA 27 Flight Controls	Changed Stall Management Yaw Damper (SMYD) software for improved performance.	No	No	A	A	
	ATA 31 Indicating/Recording Systems	Revised Common Display System (CDS) for improved performance.	No	No	A	A	
	ATA 34 Navigation	Revised FMC for improved performance.	No	No	A	A	
	ATA 73 Engine Fuel and Control	Revised EEC software for performance credit.	No	No	A	A	

This Maneuver Differences Table, from the Boeing 737-800 to the Boeing 737-800SFP, was proposed by Boeing and validated by ANAC. It lists the minimum differences levels operators must use to conduct differences training and checking of flightcrew members.

FROM BASE AIRCRAFT: 737-800 TO RELATED AIRCRAFT: 737-800SFP	MANEUVER	REMARKS	FLT CHAR	PROC CHNG	TRAINING	CHECKING	CURRENCY
	Preflight Inspection	Added check for two-position tailskid (optional).	No	Yes	A	A	
	Non-Normal Procedures	Checklist changes due to annunciation and system changes listed in DESIGN differences tables.	No	Yes	A	A	

This Design Differences Table, from the Boeing 737-8 to the Boeing 737-800, was proposed by Boeing and validated by ANAC. It lists the minimum differences levels operators must use to conduct differences training and checking of flightcrew members.

FROM BASE AIRCRAFT: 737-8 TO RELATED AIRCRAFT: 737-800	DESIGN	REMARKS	FLT CHAR	PROC CHNG	TRAINING	CHECKING	CURRENCY
	Configuration	Nose Landing Gear 8 in shorter. Single Tail Anti-Collision/Position Light.	No	No	A	A	
	Panel Layout	Changed to CDS.	No	No	B	B	
	Panel Layout	Three-Position Landing Gear Control Lever.	No	Yes	B	B	
	Limitations	Size/type/system limitations.	No	No	A	A	
	Limitations	Ground wind operating envelope removed.	No	No	A	A	
	Weights	Decreased to: • MTW - 174,700 lb. • MTOW - 174,200 lb. • MLW - 144,000 lb. • MZFW - 136,000 lb.	No	No	A	A	
	ATA 21 Air Conditioning	PACKS: Simplified Electronic Pack Flow Control System.	No	No	B	B	
	ATA 21 Air Conditioning	PACKS: Revised PACK light logic.	No	Yes	A	A	
	ATA 21 Air Conditioning	EQUIPMENT COOLING: EQUIP SMOKE light and Detection System removed.	No	Yes	B	B	
	ATA 22 Autoflight	FCC: Removed MCAS.	No	No	A	A	
	ATA 22 Autoflight	FCC: Changed AFDS functionality logic.	No	No	A	A	
	ATA 22 Autoflight	FCC: Revised STAB OUT OF TRIM light logic.	No	Yes	A	A	
	ATA 22 Autoflight	FCC: Revised SPEED TRIM FAIL light logic.	No	Yes	A	A	
	ATA 24 Electrical Power	Relocated four circuit breakers from P-6 to aisle stand.	No	No	A	A	
	ATA 27 Flight Controls	FLIGHT CONTROL SYSTEMS: Mechanical Spoiler System.	Yes	No	B	B	
	ATA 27 Flight Controls	FLIGHT CONTROL SYSTEMS: Maneuver Load Alleviation removed.	Yes	No	B	B	
	ATA 27 Flight Controls	FLIGHT CONTROL SYSTEMS: LAM removed.	Yes	No	B	B	
	ATA 27 Flight Controls	FLIGHT CONTROL SYSTEMS: Elevator Jam Landing Assist System removed.	Yes	No	B	B	
	ATA 27 Flight Controls	FLAPS/SLATS: Fixed position mechanical indicator.	No	No	B	B	
	ATA 27 Flight Controls	SPEEDBRAKES/SPOILERS: EDS removed.	Yes	No	B	B	

FROM BASE AIRCRAFT: 737-8 TO RELATED AIRCRAFT: 737-800	DESIGN	REMARKS	FLT CHAR	PROC CHNG	TRAINING	CHECKING	CURRENCY
	ATA 27 Flight Controls	SPEEDBRAKES/SPOILERS: SPEEDBRAKE EXTENDED light logic.	No	Yes	B	B	
	ATA 27 Flight Controls	SPEEDBRAKES/SPOILERS: SPOILERS light removed.	No	Yes	B	B	
	ATA 27 Flight Controls	SPEEDBRAKES/SPOILERS: ASSIST ON light removed.	No	Yes	B	B	
	ATA 27 Flight Controls	STABILIZER TRIM: STAB TRIM cutout switches panel nomenclature.	No	No	B	B	
	ATA 28 Fuel	CONTROLS AND INDICATORS: Fewer System Alerts (see ATA 34 Navigation).	No	Yes	B	B	
	ATA 28 Fuel	CONTROLS AND INDICATORS: Revised fuel FILTER BYPASS light logic.	No	Yes	B	B	
	ATA 29 Hydraulic Power	CONTROLS AND INDICATORS: System indications relocated to Lower DU.	No	No	A	A	
	ATA 30 Ice and Rain Protection	ENGINE ANTI-ICE: ENG ANTI-ICE alert removed.	No	Yes	B	B	
	ATA 30 Ice and Rain Protection	ENGINE ANTI-ICE: REVISED COWL VALVE NOMENCLATURE AND COLOR (BLUE).	No	Yes	B	B	
	ATA 30 Ice and Rain Protection	WING ANTI-ICE: L/R VALVE ALERTS COLOR (BLUE).	No	Yes	B	B	
	ATA 31 Indicating/Recording Systems	CDS: Six DUs.	No	No	B	B	
	ATA 31 Indicating/Recording Systems	LIGHTING CONTROLS: Updated and Relocated Engine Display Control Panel.	No	Yes	B	B	
	ATA 31 Indicating/Recording Systems	LIGHTING CONTROLS: Revised Display Brightness, Display Select Switch Panels, Master Dim, and Test.	No	No	B	B	
	ATA 31 Indicating/Recording Systems	ENGINE DISPLAY CONTROL PANEL: Engine Transfer Switch removed.	No	No	A	A	
	ATA 31 Indicating/Recording Systems	ENGINE DISPLAY CONTROL PANEL: MFD Info Switch removed.	No	Yes	B	B	
	ATA 31 Indicating/Recording Systems	ENGINE DISPLAY CONTROL PANEL: Revised N1 and Speed Set Selectors.	No	No	B	B	
	ATA 31 Indicating/Recording Systems	PFD: Sky Ground and Compass Display changes.	No	No	B	B	
	ATA 31 Indicating/Recording Systems	EFIS CONTROL PANEL: Dedicated VSD switch removed.	No	No	B	B	

FROM BASE AIRCRAFT: 737-8 TO RELATED AIRCRAFT: 737-800	DESIGN	REMARKS	FLT CHAR	PROC CHNG	TRAINING	CHECKING	CURRENCY
	ATA 31 Indicating/Recording Systems	EFIS CONTROL PANEL: ND/WXR Range Selector - revised functionality.	No	No	B	B	
	ATA 31 Indicating/Recording Systems	STANDBY FLIGHT INSTRUMENTS: Three Standby Flight Instruments basic.	No	No	B	B	
	ATA 31 Indicating/Recording Systems	AUX DISPLAY: Removed AUX DISPLAY.	No	No	A	A	
	ATA 31 Indicating/Recording Systems	PSEU light (replaces MAINT light).	No	Yes	B	B	
	ATA 32 Landing Gear	NOSEWHEEL STEERING: Switch relocated.	No	No	B	B	
	ATA 32 Landing Gear	Brake accumulator pressure indicator relocated.	No	No	B	B	
	ATA 32 Landing Gear	Autobrake switch relocated.	No	No	B	B	
	ATA 32 Landing Gear	Landing Gear Warning Cutout switch relocated.	No	No	B	B	
	ATA 32 Landing Gear	Revised landing gear lock override switch.	No	No	B	B	
	ATA 34 Navigation	FMS: FMC SOFTWARE U13 not basic.	No	No	B	B	
	ATA 34 Navigation	FMS: Variable Takeoff Rating function.	No	No	B	B	
	ATA 34 Navigation	FMS: Fuel Alerting and Fuel Management.	No	No	B	B	
	ATA 34 Navigation	CDU PAGES REMOVED OR REVISED: Perf Init page 1/2.	No	No	B	B	
	ATA 34 Navigation	CDU PAGES REMOVED OR REVISED: N1 Limit.	No	No	B	B	
	ATA 34 Navigation	CDU PAGES REMOVED OR REVISED: Fuel Progress page 5/5.	No	Yes	B	B	
	ATA 34 Navigation	FMC AND ENGINE DISPLAY ALERT MESSAGES REMOVED: USING RSV FUEL.	No	Yes	B	B	
	ATA 34 Navigation	FMC AND ENGINE DISPLAY ALERT MESSAGES REMOVED: FUEL DISAGREE.	No	Yes	B	B	
	ATA 34 Navigation	FMC AND ENGINE DISPLAY ALERT MESSAGES REMOVED: INSUFFICIENT FUEL.	No	Yes	B	B	
	ATA 34 Navigation	Removed FUEL FLOW message (engine display only).	No	Yes	B	B	
	ATA 36 Pneumatic	BLEED AIR CONTROL PANEL: Added RAM DOOR FULL OPEN lights.	No	No	A	A	
	ATA 36 Pneumatic	BLEED AIR CONTROL PANEL: Changed BLEED light to BLEED TRIP OFF light.	No	Yes	A	A	
	ATA 36 Pneumatic	BLEED AIR CONTROL PANEL: Revised BLEED TRIP OFF light logic.	No	Yes	B	B	

FROM BASE AIRCRAFT: 737-8 TO RELATED AIRCRAFT: 737-800	DESIGN	REMARKS	FLT CHAR	PROC CHNG	TRAINING	CHECKING	CURRENCY
	ATA 49 Airborne Auxiliary Power	SYSTEM OPERATION: Added MAINT light.	No	No	A	A	
	ATA 49 Airborne Auxiliary Power	SYSTEM OPERATION: Added APU EGT gauge.	No	No	A	A	
	ATA 49 Airborne Auxiliary Power	SYSTEM OPERATION: Removed retractable door.	No	No	B	B	
	ATA 49 Airborne Auxiliary Power	SYSTEM OPERATION: Removed APU DOOR light.	No	Yes	B	B	
	ATA 72, 73, 77, 78, 80 Powerplant	ENGINES: CFM56-7 engines.	No	Yes	B	B	
	ATA 72, 73, 77, 78, 80 Powerplant	EEC SYSTEM: Added Overboost rating.	No	No	B	B	
	ATA 72, 73, 77, 78, 80 Powerplant	EEC SYSTEM: Removed Icing Idle speed.	No	No	B	B	
	ATA 72, 73, 77, 78, 80 Powerplant	INDICATORS: Revised Display Format.	No	No	B	B	
	ATA 72, 73, 77, 78, 80 Powerplant	INDICATORS: Added compact engine display.	No	No	A	A	
	ATA 72, 73, 77, 78, 80 Powerplant	INDICATORS: Removed THRUST alert.	No	Yes	B	B	
	ATA 72, 73, 77, 78, 80 Powerplant	INDICATORS: Removed MOTORING indication for bowed rotor logic.	No	No	B	B	
	ATA 72, 73, 77, 78, 80 Powerplant	THRUST REVERSER SYSTEM: Removed REVERSER COMMAND and REVERSER AIR/GND alerts.	No	Yes	B	B	
	ATA 72, 73, 77, 78, 80 Powerplant	THRUST REVERSER SYSTEM: Replaced REVERSER LIMITED light with REVERSER light.	No	Yes	B	B	

This Maneuver Differences Table, from the Boeing 737-8 to the Boeing 737-800, was proposed by The Boeing Company and validated by ANAC. It lists the minimum differences levels operators must use to conduct differences training and checking of flightcrew members.

FROM BASE AIRCRAFT: 737-8 TO RELATED AIRCRAFT: 737-800	MANEUVER	REMARKS	FLT CHAR	PROC CHNG	TRAINING	CHECKING	CURRENCY
	Preflight Inspection	Optional installation of two-position tailskid.	No	Yes	A	A	
	Climb	After takeoff checklist - Landing gear handle.	No	Yes	B	B	
	Non-Normal	Checklist changes due to annunciation and system changes listed in DESIGN differences tables.	No	Yes	A	A	

Appendix 3 – BOEING 737 MAX SPECIAL TRAINING FOR FLIGHTCREWS

The purpose of this appendix is to describe ground and flight training requirements associated with pilot qualification on the 737 MAX. The MDR Table makes reference to this appendix with the use of an asterisk (shown as D*).

No pilot may operate the 737 MAX unless the ground and flight training documented in this appendix has been completed. References to “pilots” in this section include both PICs and SICs unless otherwise specified. These Special Training segments can be standalone or embedded into another training curriculum. Some tasks outlined in this appendix are purposely omitted from Section 3.2, Training Areas of Special Emphasis. The required training is as follows:

1. GROUND TRAINING

1.1. Training on the following NNCs:

- Runaway Stabilizer.
- SPEED TRIM FAIL.
- STABILIZER OUT OF TRIM.
- Stabilizer Trim Inoperative.
- Airspeed Unreliable.
- ALT DISAGREE.
- AOA DISAGREE.

1.2. Training in this section emphasizes the design differences associated with FCC software version P12.1.2 for the 737 MAX. This training also emphasizes necessary ground training between the 737NG and 737 MAX with FCC software version P12.1.2 or newer. Pilots may complete this training by accomplishing the applicable 737 MAX CBT provided by Boeing or an ANAC-approved equivalent.

1.2.1. ATA 22 – Autoflight – FCC – MCAS:

- MCAS function description.
- Conditions for operation.
- Erroneous FCC trim commands.
- Flight deck alerting of the failure of the MCAS function.

1.2.2. ATA 22 – Autoflight – FCC – AFDS:

- Automatic AP disengagement.
- Temporary FD removal.
- AFDS pitch mode changes following stick shaker.
- Inhibiting of AP nose up trim.

1.2.3. ATA 22 – Autoflight – FCC – STAB OUT OF TRIM:

- Alert illumination logic (ground vs. flight).
- Revised NNC.

1.2.4. ATA 22 – Autoflight – FCC – SPEED TRIM FAIL:

- Function of the SPEED TRIM FAIL light.
- Revised NNC.

1.3. Training on the following bullet points that emphasize Boeing-recommended procedures. Pilots may complete this training by accomplishing the applicable 737 CBT provided by Boeing or an ANAC-approved equivalent.

1.3.1. 737 Manual Trim Operation:

- Manual stabilizer trim operation.
- Manual stabilizer trimming techniques.
- Effects of airspeed and aerodynamic loads on manual stabilizer trim operation.

1.3.2. 737 Unreliable Airspeed – Determining a Reliable Airspeed:

- Recognition of flight deck effects of an unreliable airspeed condition.
- Memory pitch and thrust settings associated with the NNC.
- Determination of reliable airspeed indication.

2. FLIGHT TRAINING

Training is required to be conducted in a 737 MAX Level C or D FFS. The following bullet points emphasize the objectives of each maneuver. This training applies to pilots flying the 737 MAX, or conducting 737NG/737 MAX MFF. A 737NG Level C or D FFS may be used for some conditions where noted below.

2.1 Demonstration of MCAS activation accomplished by each pilot acting as PF.

2.1.1 MCAS activation during an impending stall (or full stall) and recovery demonstration during manual flight in a clean configuration.

2.1.2 Demonstrate MCAS activation stabilizer trim responses:

- Stabilizer trim in the nose down direction when above threshold AOA for MCAS activation during stall.
- Stabilizer trim in the nose up direction when below threshold AOA for MCAS activation during recovery.

2.2 Runaway stabilizer condition requiring use of manual stabilizer trim accomplished by each pilot acting as PF.

2.2.1 Runaway stabilizer training as described in section 3.2.

2.2.2 Operation of each manual trim technique (as defined by Boeing).

2.2.3 This training can be completed in a 737 MAX or 737NG FFS.

2.3 Use of manual stabilizer trim during approach, go-around, and level off accomplished by each pilot acting as PF.

2.3.1 Use of manual stabilizer trim as described in section 3.2.

2.3.2 This training can be completed in a 737 MAX or 737NG FFS.

2.4 A Cross-FCC Trim Monitor activation demonstration accomplished by either pilot acting as PF.

- 2.4.1 Condition must terminate in a landing in order to demonstrate the updated STAB OUT OF TRIM light functionality.
- 2.5** Erroneous high AOA during takeoff that leads to an unreliable airspeed condition accomplished by either pilot acting as PF.
 - 2.5.1 Demonstrates flight deck effects (i.e., aural, visual, and tactile) associated with the failure.
 - 2.5.2 Fault occurring during the takeoff procedure.
 - 2.5.3 Must include a go-around or missed approach flown with erroneous high AOA condition.
 - 2.5.3.1 Special emphasis placed on FD behavior biasing out of view upon selecting takeoff/go-around (TO/GA).